

February 7, 2006

Mr. Paul Marshall
SDIP EIS/EIR Comments
State of California Department of Water Resources
1416 9th Street
Sacramento, CA 95814

RE: Comments on the South Delta Improvements Program Draft Environmental Impact Statement/Environmental Impact Report released on November 10, 2005 by the California Department of Water Resources (DWR).

Dear Mr. Marshall:

The National Wildlife Federation (NWF) appreciates the opportunity to provide comments on the recently-released *South Delta Improvements Program Draft Environmental Impact Statement/Environmental Impact Report* (SDIP EIS/EIR).

NWF recognizes the critical need for improvements in the management of the South Delta region's water resources given the continuing problems associated with agricultural, industrial and urban activities that are placing strain on water availability, diminishing water quality and jeopardizing the health of habitats critical to the region's fish and wildlife. However, in light of our review of this draft, NWF believes that the EIS/EIR, as currently stated, does not adequately reflect the likely impacts of the SDIP on vulnerable fish and wildlife populations and the future needs of the region's people.

Specifically, NWF is deeply concerned about the failure of the EIS/EIR to incorporate the anticipated impacts on California's water resources and water quality due to global climate change. Of greatest concern is the fact that DWR largely bases its projections for future water availability on the flawed assumption that environmental conditions in California have been static and will continue to be static in the future. This assumption is surprising given the fact that California's government agencies – including DWR – have recognized global climate change as a serious threat to the state's water resources. In its *Draft California Water Plan Update 2005*, DWR states specifically that:

“As a result of global climate change, California's future hydrologic conditions will likely be different from patterns observed in the past century. Predictions include increased temperatures, reductions in Sierra snowpack, earlier snowmelt, and a rise in sea level, although the extent and timing of the changes remain uncertain. These changes could have major implications for water supply, flood management, and ecosystem health” (Volume 1, page 4-32).

Moreover, DWR acknowledges that, despite some inherent uncertainties, there is sufficient scientific evidence indicating a strong likelihood that a reduction in average snow cover and a decline in snowpack in much of the region due to global climate change will adversely affect water resources before the end of this century. For example, DWR states that, "In the Sacramento River region, only about one fourth of the snow zone would remain with an estimated decrease of nearly 3 million acre-feet of April through July runoff" (Volume 4, page 4-617). This is significant given that, for much of the region, snowpack is the most-significant source of water for the summer dry season.

There are numerous other scientific reports studying the effects that global climate change is having on California's water resources¹. One of the primary conclusions of many of these studies

¹ Intergovernmental Panel on Climate Change 2001; Summary for Policymakers

http://www.grida.no/climate/ipcc_tar/wg1/008.htm

The Effects of Climate Change on Water Resources in the West: Introduction and Overview

pp. 1-11 Tim Barnett, Robert Malone, William Pennell, Detlet Stammer, Bert Semtner, Warren Washington

Draft of paper: <http://cirrus.ucsd.edu/~pierce/crd/globalwarming/ACPI-ClimaticChange.12-12-02.pdf>

Mid-Century Ensemble Regional Climate Change Scenarios for the Western United States

pp. 75-113 L. Ruby Leung, Yun Qian, Xindi Bian, Warren M. Washington, Jongil Han, John O. Roads

http://www.pnl.gov/atmos_sciences/Lrl/Leung-3.pdf

Changes in Snowmelt Runoff Timing in Western North America under a 'Business as Usual' Climate Change Scenario pp. 217-

232 Iris T. Stewart, Daniel R. Cayan, Michael D. Dettinger

http://tenaya.ucsd.edu/~dettinge/stewart_acpi.pdf

Mitigating the Effects of Climate Change on the Water Resources of the Columbia River Basin

pp. 233-256 Jeffrey T. Payne, Andrew W. Wood, Alan F. Hamlet, Richard N. Palmer, Dennis P. Lettenmaier

http://www.tag.washington.edu/publications/papers/payne_CC_final_080503.pdf

Potential Implications of PCM Climate Change Scenarios for Sacramento-San Joaquin River Basin Hydrology and Water

Resources, pp. 257-281 Nathan T. VanRheenen, Andrew W. Wood, Richard N. Palmer, Dennis P. Lettenmaier

<http://www.tag.washington.edu/publications/papers/VanRheenen-etal.2004.ClimChg.62.257-281.pdf>

Simulated Hydrologic Responses to Climate Variations and Change in the Merced, Carson, and American River Basins, Sierra

Nevada, California, 1900-2099, pp. 283-317 Michael D. Dettinger, Daniel R. Cayan, Mary K. Meyer, Anne E. Jeton

http://tenaya.ucsd.edu/~dettinge/sierra_change.pdf

http://sfbay.wr.usgs.gov/access/bibliography/pdf/dettinger_2004_climate_change.pdf

Elevational Dependence of Projected Hydrologic Changes in the San Francisco Estuary and Watershed, pp. 319-336 Noah

Knowles, Daniel R. Cayan

http://sfbay.wr.usgs.gov/access/bibliography/pdf/knowles_2004_sf_estuary.pdf

The Effects of Climate Change on the Hydrology and Water Resources of the Colorado River Basin, pp. 337-363 Niklas S.

Christensen, Andrew W. Wood, Nathalie Voisin, Dennis P. Lettenmaier, Richard N. Palmer

Draft of paper: http://www.hydro.washington.edu/Lettenmaier/Publications/ACPI/Christenson_CC_final_0801.pdf

http://ftp.hydro.washington.edu/pub/niklas/paper_sep26_2.pdf

VanRheenen, N.T., Palmer, R.N., and Hahn, M.A. (2003). "Evaluating Potential Climate Change Impacts on Water Resources

Systems Operations: Case Studies of Portland, Oregon and Central Valley, California." Water Resources Update, 124, 35-50.

<http://www.tag.washington.edu/publications/papers/VanRheenen-etal.2003.WaterResourcesUpdate.124.35-50.pdf>

Spring onset in the Sierra Nevada--When is snowmelt independent of elevation?, by Lundquist, Cayan, and Dettinger, Journal of Hydrometeorology, 5, 325-340,

http://tenaya.ucsd.edu/~dettinge/Lundquist_synchmelt.pdf

Brekke, L.D., N. L. Miller, K.E. Bashford, N.W.T. Quinn, and J.A. Dracup. 2004: Climate change impacts uncertainty for water resources in the San Joaquin River Basin, California, J. Amer. Water Resources Assoc., 149-164. [http://www-](http://www-esd.lbl.gov/ESD_staff/miller/pubs/brekke_2004.pdf)

[esd.lbl.gov/ESD_staff/miller/pubs/brekke_2004.pdf](http://www-esd.lbl.gov/ESD_staff/miller/pubs/brekke_2004.pdf)

Miller, N.L., K.E. Bashford, E. Strem, 2003: Potential Impacts of Climate Change on California Hydrology, J. Amer. Water

Resources Assoc., 771-784. http://www-esd.lbl.gov/ESD_staff/miller/pubs/miller_jawra2003.pdf

Kim, J., T-K Kim, R W Arritt and N L Miller 2002: Impacts of increased CO2 on the hydroclimate of the western United States,

J. Climate, 15, 1926-1942 http://www-esd.lbl.gov/ESD_staff/miller/pubs/kim_jclimate2002.pdf

"The transboundary setting of California's water and hydropower systems--Linkages between the Sierra Nevada, Columbia, and Colorado hydroclimates" by Cayan, Dettinger, Redmond, McCabe, Knowles, and Peterson, 2003, book chapter, pdf.

is that loss of snowpack will likely mean earlier peak spring runoff, lower early-summer reservoir levels and lower summer streamflows, placing an added strain on scarce water resources when those resources are already stretched thin by competing needs. Several others analyze tools available to estimate the potential effects of climate change on State Water Project operations². Using these available tools, the DEIS/R must analyze impacts from the proposed SDIP project under climate change.

Accordingly, there is sufficient scientific information to warrant immediate and serious consideration of climate change in the SDIP, and NWF urges DWR to revise the EIS/EIR to disclose the impacts of the project under climate change.

The State of California is proving itself to be a leader in addressing global climate change through meaningful actions to minimize the threat altogether through reductions in greenhouse gas emissions, as evidenced by the call by Governor Schwarzenegger to establish significant emissions reduction targets under *Executive Order S-3-05*. That executive order also calls on the State to consider adaptation plans to combat the impacts of climate change. Through its ongoing water management planning process, DWR has an opportunity to bolster the state's leadership in this area as well. NWF sincerely hopes that you seize that opportunity today.

Sincerely,

Paula Del Giudice, Director
NWF Western Natural Resource Center

PSG/psg

<http://tenaya.ucsd.edu/~dettinge/transboundary.pdf>

Climate Change Sensitivity Study of California Hydrology: A Report to the California Energy Commission. LBNL Technical Report No. 49110. November 2001. Norman L. Miller and Kathy E. Bashford California Water Resources Research and Applications Center Lawrence Berkeley National Laboratory, University of California and Eric Strem California-Nevada River Forecast Center
NOAA-National Weather Service
<http://www-esd.lbl.gov/RCC/outreach/Miller-Bashford-Strem.pdf>

² Potential Implications of PCM Climate Change Scenarios for Sacramento–San Joaquin River Basin Hydrology and Water Resources, pp. 257-281 Nathan T. VanRheenen, Andrew W. Wood, Richard N. Palmer, Dennis P. Lettenmaier

<http://www.tag.washington.edu/publications/papers/VanRheenen-et-al.2004.ClimChg.62.257-281.pdf>

Simulated Hydrologic Responses to Climate Variations and Change in the Merced, Carson, and American River Basins, Sierra Nevada, California, 1900–2099, pp. 283-317 Michael D. Dettinger, Daniel R. Cayan, Mary K. Meyer, Anne E. Jeton

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Draft of paper: http://www.hydro.washington.edu/Lettenmaier/Publications/ACPI/Christenson_CC_final_0801.pdf